

CONT'D
provide the updated control information to at least one of the network elements.

53
53. (Amended Once) An apparatus for providing dynamic feedback control of network elements in a data network, the data network including a plurality of network elements, each of said network elements having a plurality operating parameters associated therewith, said operating parameters being related to at least one control parameter of said element, the apparatus comprising:

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means for receiving information relating to an operation of a first subset of the plurality of network elements;

means for providing at least a portion of said received information to at least one analysis entity for analyzing said portion of received data and calculating updated control information based on such analysis, wherein the updated control information specifies a limit on the operation of the at least one network element;

means for receiving the updated control information calculated by the analysis entity; and

means for providing updated control information to at least one of the network elements.

REMARKS

Claims 1, 40, 47, and 53 have been amended to clarify the invention. Claims 1-6, 10-19, and 40-53 remain pending.

The Examiner rejected claims 1-6, 10-18, and 40-53 under 35 U.S.C. §103(a) as being unpatentable over Abe (U.S. patent 6,108,304) in view of Hanson (U.S. patent 6,633,861). The Examiner has also rejected claim 19 under 35 U.S.C. §103(a) as being unpatentable over Abe in view of Hanson and in further view of Desai (US 5,781,703). The Examiner's rejections are respectfully traversed as follows.

Claim 1 is directed towards a method "for providing dynamic feedback control of network elements in a data network, the data network including a plurality of network elements, each of said network elements having a plurality operating parameters associated therewith, said operating parameters being related to at least one control parameter of said element." Claim 1 also requires "receiving information relating to an operation of a first subset of the plurality of network elements" and "providing at least a portion of said received information to at least one analysis entity for analyzing said portion of received data and calculating updated control information based on such analysis, wherein the updated control information specifies a limit on the operation of the at least one network element" Claim 1 also requires "receiving the updated control information calculated by the analysis entity" and "providing the updated control information to at least one of the network elements." In other words, updated control

information which limits operation of a network element is calculated based on analysis of information that relates the operation of a subset of network elements which includes such updated network element. Providing update control information which was calculated based on receipt of information based on operation of a subnet's operation (which include such network element) and which also limits operation of a network element advantageously provides dynamic feedback for controlling the operation of a network element. Independent claims 40, 47, and 53 have a similar limitation regarding updated control information.

The primary reference Abe discloses a system having a network management equipment (200 of Fig. 1) which receives bandwidth values for routes connected to other network elements EA~ED (Fig. 1). The received bandwidth information is then used to calculate an available bandwidth for such routes, and this calculated available bandwidth information is sent to the network elements EA~ED so they can determine which routes to use based on the available bandwidths of such routes. See Column 7, lines 32-60 and Column 9, lines 1-12. As the Examiner admits, Abe fails to disclose providing control information that specifies a limit on the operation. It is respectfully submitted that Abe also fails to teach or suggest providing at least a portion of the received information (which relates to the operation of the first subset of network elements) to at least one analysis entity for analyzing the portion of received data and calculating updated control information based on such analysis. Although one may argue that Abe teaches providing such received information relating to the subnet's operation to an analysis entity (network management equipment), Abe fails to teach or suggest that such received information is provided to such analysis entity for calculating update control information based on such received information and, accordingly, also the subnet's operation, in the manner claimed. Abe also fails to teach or suggest providing update information that was calculated based on such received information to a network element, in the manner claimed.

The secondary reference Hanson also fails to teach or suggest such limitation. In brief, Hanson merely teaches providing a network operation parameter (CUF) to a node so that the node can self-limit its operation based on such network operation parameter, rather than providing an updated control information that was calculated based on such network operation. Specifically, Hanson teaches that the network operating parameter CUF is simply "a measure of the utilization factor, which is a measure of the utilization of critical resources..." See Column 5, lines 63-67. Since both Abe and Hanson fail to teach or suggest providing to a network element updated control information that was calculated based on such network operation in the manner claimed, it is respectfully submitted that claims 1, 40, 47, and 53 are patentable over Abe and Hanson.

The Examiner's rejections of the dependent claims are also respectfully traversed. However, to expedite prosecution, all of these claims will not be argued separately. Claims 2-6, 10-19, 41-46, and 48-52 each depend directly from independent claims 1, 40, or 47 and, therefore, are respectfully submitted to be patentable over cited art for at least the reasons set forth above with respect to claims 1, 40, and 47. Further, the dependent claims require additional elements that when considered in context of the claimed inventions further patentably distinguish the invention from the cited art. For example, claims 2, 3, 5, and 6 require that the updated control information is a committed information rate value, an excess information rate value, a burst size value, and an excess burst size value, respectively. The cited references fail to teach or suggest such limitations.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
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APPENDIX:
MARKED UP VERSION OF CLAIM AMENDMENTS

Claims 1, 40, 47, and 53 have been amended as follows:

1. (Amended Twice) A method for providing dynamic feedback control of network elements in a data network, the data network including a plurality of network elements, each of said network elements having a plurality operating parameters associated therewith, said operating parameters being related to at least one control parameter of said element, said method comprising:

receiving information relating to [characteristics associated with] an operation of a first subset of the plurality of network elements;

providing at least a portion of said received information to at least one analysis entity for analyzing said portion of received data and calculating updated control information based on such analysis, wherein the updated control information specifies a limit on the operation of the at least one network element; [and]

receiving the updated control information calculated by the analysis entity; and

providing the updated control information to at least one of the network elements[, wherein the updated control information is in response to the received information and specifies a limit on the operation of the at least one network element].

40. (Amended Once) An adaptive feedback system in a data network, the network including a plurality of network elements, at least one network element having a plurality operating parameters associated therewith, said operating parameters being related to at least one control parameter of said element, the feedback system comprising:

one or more processors;

one or more memory, wherein at least one of the processors and memory are adapted to:

receive information relating to [characteristics associated with] an operation of a first subset of the plurality of network elements;

provide at least a portion of said received information to at least one analysis entity for analyzing said portion of received data and calculating updated control information based on such analysis, wherein the updated control information specifies a limit on the operation of the at least one network element; [and]

receive the updated control information calculated by the analysis entity; and

provide the updated control information to at least one of the network elements[, wherein the updated control information is in response to the received information and specifies a limit on the operation of the at least one network element].

47. (Amended Once) A computer program product for handling data transmitted within a computer network, the computer program product comprising:
at least one computer readable medium;
computer program instructions stored within the at least one computer readable product configured to:

receive information relating to [characteristics associated with] an operation of a first subset of the plurality of network elements;

provide at least a portion of said received information to at least one analysis entity for analyzing said portion of received data and calculating updated control information based on such analysis, wherein the updated control information specifies a limit on the operation of the at least one network element; [and]

receive the updated control information calculated by the analysis entity; and

provide the updated control information to at least one of the network elements[, wherein the updated control information is in response to the received information and specifies a limit on the operation of the at least one network element].

53. (Amended Once) An apparatus for providing dynamic feedback control of network elements in a data network, the data network including a plurality of network elements, each of said network elements having a plurality operating parameters associated therewith, said operating parameters being related to at least one control parameter of said element, the apparatus comprising:

means for receiving information relating to [characteristics associated with] an operation of a first subset of the plurality of network elements;

means for providing at least a portion of said received information to at least one analysis entity for analyzing said portion of received data and calculating updated control information based on such analysis, wherein the updated control information specifies a limit on the operation of the at least one network element; [and]

means for receiving the updated control information calculated by the analysis entity; and

means for providing updated control information to at least one of the network elements[, wherein the updated control information is in response to the received information and specifies a limit on the operation of the at least one network element].